

Goat Lice

BY O. G. BABCOCK AND EMORY C. CUSHING ¹

TWO KINDS of blue lice, two kinds of red lice, and a large yellow louse attack goats. Although they are the worst external parasite the goat keeper has to contend with, he can get rid of them with very little trouble if he will follow the directions given here.

LICE are the most widespread and probably the most important external parasites of goats of all breeds in the United States. Yet the control of these pests is not difficult, and there would seem to be little reason for goat raisers throughout the country to sustain the losses that are at present caused by these parasites year after year.

SPECIES, LIFE HISTORY, AND SPREAD OF GOAT LICE

Goats are commonly infested with five species of lice, two of which (*Linognathus stenopsis* and *L. africanus*), called blue lice, feed by puncturing the skin and sucking blood. The other three have mouth parts fitted for chewing and feed on the hair, scales from the skin, and extraneous matter on the skin surface. Of these three species, one (*Bovicola penicillata*) is commonly referred to as the large yellow or hairy louse and the other two (*B. limbatus* and *B. caprae*) as red lice.

The different species of goat lice have much the same breeding habits, and their life cycles are similar. Ordinarily, goat lice spend their entire lives on the bodies of goats; they mate, lay their eggs, and develop without leaving the host. Sometimes other animals such as sheep, dogs, and burros that are in close association with infested flocks may act as temporary carriers of goat lice, but they are not subject to true infestations.

¹ O. G. Babcock is Associate Entomologist and Emory C. Cushing is Senior Entomologist, Division of Insects Affecting Man and Animals, Bureau of Entomology and Plant Quarantine.

The nits, or eggs of the lice, are laid in the fleece and are attached firmly to the hair close to the skin. Quite often an egg is cemented to more than one fiber, which accounts for the matting of the hair frequently seen in heavily infested animals. The eggs hatch in 7 to 14 days, depending on the temperature of the air.

After hatching, the immature louse must shed its skin twice before reaching the adult stage. The first molt occurs 2 to 10 days after hatching and the second 3 to 13 days after the first. As many as 15 days after the second molt are sometimes required for the young

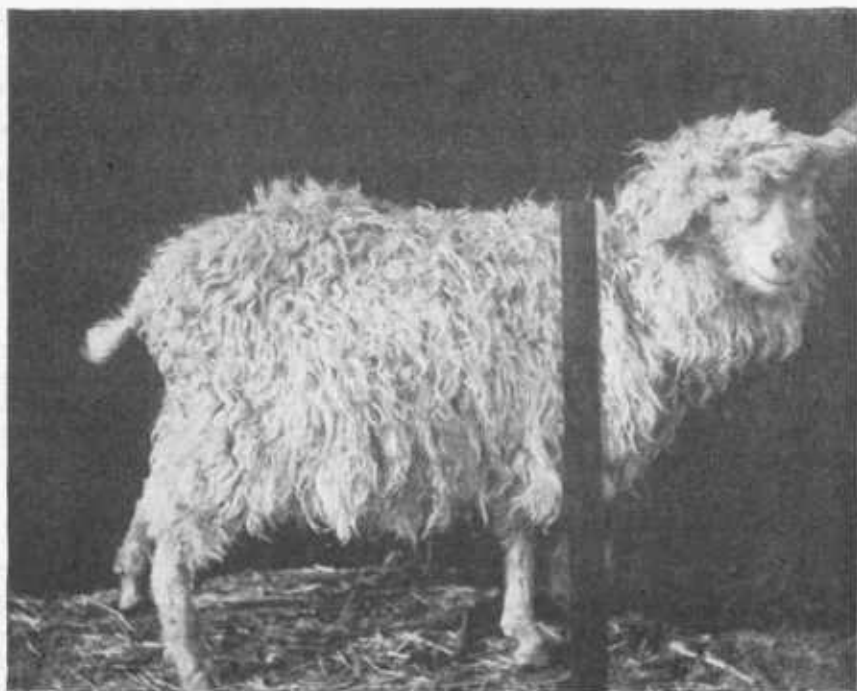


FIGURE 1.—Goat heavily infested with lice.

lice to become sexually mature. The entire life cycle of goat lice from the time the eggs are laid until full maturity is reached ranges in length from 14 to 75 days.

Infestations of goat lice are easily detected, although newly hatched lice are almost transparent and it is difficult to see them. The adults can readily be seen with the unaided eye, however, and the fact that in ordinary infestations all stages are present on the goat at the same time makes detection easy. During the summer months the number of lice on the animals is greatly reduced, but it increases rapidly through the fall and winter.

Lice do not remain attached in one place as do true ticks but move about over the body of the animal, feeding at frequent intervals and causing a constant and extreme itching and irritation of the skin.

Because of the annoyance occasioned by both sucking and biting lice, the infested animals are restless and do not feed well; hence they lose weight, become unthrifty, and show signs of low vitality (fig. 1). The mohair becomes ragged and broken from scratching, biting, and rubbing. The fibers are weakened, lack luster, and become matted, tangled, and discolored. In some sections of the country where goat raising and mohair production have been highly developed, ranchmen recognize that in heavily infested flocks the quality and quantity of mohair are greatly reduced, the actual loss amounting to as much as one-half pound of mohair per animal. Moreover, infested animals are apt to scratch themselves on sharp objects, such as pointed broken boards, protruding nails in corrals, and wire fences, with the result that the skin is often broken, making wounds that are susceptible to screwworm infestation, which may cause further losses.

Kids and the old, weak, unthrifty animals of the flock are usually the most heavily infested.

When introduced into a clean herd, goat lice spread rapidly from one animal to another, especially during cold weather or when the animals are confined in close contact with one another. The spread of the infestation is due chiefly to the direct contact of lousy animals with uninfested ones. It is possible, however, for an infestation to start among clean goats that are confined on premises previously occupied by lousy animals, owing to the fact that under favorable conditions some adult lice may live apart from a host for periods of 3 to 18 days, particularly in warm weather. The nits attached to dislodged hair may continue to hatch for several days, and the young lice may live for 3 or 4 days.

CONTROL AND ERADICATION

Goat lice are probably more easily eliminated, usually at less expense in money and labor, than any other group of insect parasites of domestic animals. Several insecticides that are cheap and readily available are effective in killing these insects.

The blue, or sucking, lice are harder to kill and inflict greater injury than the biting lice, but both can be eradicated by proper control practices.

Perhaps the simplest method, and the only effective one for eradicating the lice, is to dip the goats in a water solution or suspension of the louse-killing material. Since it is not advisable to use this treatment in cold weather, when the lice become much more numerous, the owner should not wait until winter to begin control treatments. When infestations become so heavy during the winter that treatments are imperative, if only a few animals are involved, they may be hand-dusted with an insecticide to keep the parasites in check. Although this cannot be depended upon to kill all the lice, it will greatly reduce their number and prevent severe injury to the goats. Spraying is sometimes resorted to, but, like hand dusting, it is not completely effective.

The best time to dip Angora goats is 1 month to 6 weeks after they are sheared, provided this permits the dipping to be done before

cold weather. If Angoras are treated too short a time before shearing, the insecticides may lower the quality of the fleece by removing some of the natural oil. Furthermore, animals dipped when they have a heavy fleece carry out more dip, which increases the cost of the treatment. A month to 6 weeks after shearing, the fleece is heavy enough to retain a sufficient amount of the insecticide to kill the lice, but it does not retain excessive amounts of the dip.

Goats of breeds other than Angora may be treated at any time when weather conditions are favorable.

None of the insecticides now recommended is effective in killing louse eggs, and since these may continue to hatch for 10 or 12 days, it is necessary to follow the first dipping with a second one in 11 to 16 days. Usually two dippings are sufficient to eradicate all the lice in a flock, provided every animal is found and treated. When lice make their appearance in a flock it is always advisable to treat every animal. The dipped animals should then be turned into pastures that have not been occupied by goats for the previous 4 to 6 weeks.

INSECTICIDES FOR KILLING GOAT LICE

Several materials are useful for treating goats infested with lice. All of them have certain disadvantages, but they are about equally effective in eradicating the parasites. Finely ground sulfur, 98 percent of which will pass through a sieve having 325 meshes to the inch, is one of the simplest. Since the sulfur particles are not wetted by contact with water, it is necessary to combine the material with a so-called wetting agent, which permits the mixing of the sulfur with water and holds the particles in suspension so that they become enmeshed in the hair of the animal when it is dipped. Commercial companies now supply, at reasonable prices, wettable sulfur—that is, sulfur with a wetting agent added—already prepared, and it is advisable for goat raisers to purchase sulfur in this form rather than attempt to prepare the mixture themselves. All wettable sulfurs do not combine well in hard water, especially those containing relatively large amounts of alkali and gypsum, but the use of certain wetting agents will largely overcome this difficulty. Goat raisers in the United States who have not had previous experience with the use of sulfur in their present localities should request the advice of the United States Department of Agriculture regarding the proper material to use.

Wettable sulfur kills lice slowly, requiring from 7 to 10 days to effect a complete kill. It is not known definitely how sulfur kills the lice, but the available evidence indicates that a gas, hydrogen sulfide, is given off as a result of the contact of the sulfur with the animal, and that this gas destroys the insects. In preparation for dipping, the sulfur is mixed with water at the rate of 10 pounds per 100 gallons. A mixture of wettable sulfur and one of the powdered insecticidal plant materials, cube or derris, containing at least 4 to 5 percent rotenone is somewhat more efficient in killing lice than sulfur alone. Fifty pounds of wettable sulfur plus 10

pounds of either cube or derris powder per 1,000 gallons of water makes an efficient dip. The same combination in these proportions of sulfur and cube or derris is a good dust for hand treating infested goats; or sulfur, cube, or derris may be used alone. An ounce or two per animal is sufficient for one treatment.

Prepared arsenical dips which are available on the market and are recommended by the Government for use in dipping cattle to remove the cattle fever tick are also suitable for the control of goat lice. The instructions on the label of the container should be followed closely in diluting and using ready-prepared arsenical dips. Since they are poisonous to animals when taken internally, care should be taken that the animals do not drink any of the dip. The vat should not be emptied where the liquid will soil pasture or feed, and the freshly treated animals should be held in a drain pen or a suitable inclosure where the dip dripping from them cannot form pools. Men working around the vat should be careful not to get their clothing wet with the arsenical solution, and should wash their hands frequently to prevent possible absorption of the arsenic.

When used with soft water, coal-tar-creosote dips, sold under various trade names, are effective for the control of goat lice. In hard water the ingredients often separate, and injury to the animals and the fleeces results.

TREATING INFESTED GOATS

Where only a small number of animals are to be treated, a large washtub or a small galvanized-iron tank will suffice, but when several hundred animals are to be dipped, it is more convenient and economical to construct a special vat. The round vat shown in figure 2 has proved the most economical for the dipping of goats alone. If it is necessary to dip horses, cattle, and other large animals also, it is advisable to construct a rectangular vat. Specifications for these vats may be obtained from the United States Department of Agriculture.

The animals should not be dipped if there is likely to be a cold wave before they become thoroughly dry. Dipping in excessively hot weather also should be avoided. The animals should not be driven any distance just before or very soon after dipping. Care in throwing them into the vat will help to avoid injuries and reduce the possibility of strangling. In fact, quiet, careful handling is essential to get the best results and to prevent losses.

The animal should be kept in the dip approximately 1 minute. When it comes to the surface after the first immersion, it should be allowed to get its breath, then its head should be ducked beneath the surface momentarily, and it should receive another ducking before leaving the vat.

The dipping fluid in the vat should always be 40 to 60 inches deep. In estimating the amount of dip required to treat a flock, allow at least 2 quarts for each freshly sheared goat and about 1 gallon for each full-fleeced animal.



FIGURE 2.—A round vat for dipping goats.

FURTHER STUDIES ON THE CONTROL OF GOAT LICE

Dips now recommended for the control of goat lice are sometimes toxic to the animals and none of them destroy the eggs. Research is being carried on to find a nonpoisonous insecticide that will kill all lice and eggs in a single application. Such a dip would eliminate much of the time and labor required in using present remedies that must be applied two or three times a season to effect control. Results of recent experiments encourage the belief that such an insecticide will soon be found.